transfer to heat exchange fluid the heat exchange fluid passes by line 316 to heat exchanger 322 for heat exchange and fluid temperature control.

0028   Line 316 is equipped with an interlock flow switch 308 which is in electronic communication by conventional wire or wireless means (e.g., cable 311A), with controller 310. Controller 310 may also be in electronic communication with chamber process control functions (not shown) and with heat exchanger 322 (e.g., 311B) and pump 309 (e.g., 311C) for taking desired action upon an interruption in heat exchange fluid flow, adjusting a flow rate for temperature control of the fluid or for adjusting a heat exchange rate. Controller 310 may additionally control the temperature of the heat exchange fluid passing through heat exchanger 322.

0029   According to the present invention it has been found, for example, that HBr concentrations present on a process wafer following an etching process according to the prior art were at levels of 0.3 to 0.5 ppm. In contrast, after using the method

16

and apparatus according to the present invention, HBr concentrations present on a process wafer following an etching process, for example, an STI etching process, were reduced to less than 0.05 ppm. As a result, acidic contamination levels were reduced in the loadlock chambers and wafer processing defects due to corrosive action were likewise reduced thereby increasing overall wafer processing throughput and semiconductor feature (e.g., STI features) quality. Moreover, the corrosive action that the etching system parts have been subjected to by acidic contamination such as the robotic arm and loadlock chamber parts according to the prior art has been reduced according to the present invention.

0030   The preferred embodiments, aspects, and features of the invention having been described, it will be apparent to those skilled in the art that numerous variations, modifications, and substitutions may be made without departing from the spirit of the invention as disclosed and further claimed below.